Part III: Detailed Narratives of Local Project Development Team Conservation Priorities and Actions

Part III of this plan addresses the issues identified by each Local Project Development Team (LPDT) and their past, current, and proposed conservation actions and projects at geographic priority areas where LPDTs intend to focus their work over the next five to 20 years. These locations range from narrow riparian areas along river reaches to entire watersheds and even larger areas such as aspen (*Populus tremuloides*) communities or sage-grouse (*Centrocerus urophasianus*) core areas. Part III of this plan is divided into four sections based on each Wyoming Landscape Conservation Initiative (WLCI) local project development team (Carbon, Lincoln/Uinta, Sublette, and Sweetwater). During the planning phase of this report, each team was responsible for identifying issues and predominant geographic areas where conservation actions and their interests would be focused over the next five or more years. Part III also provides the necessary project level details that will enable WLCI managers to evaluate the effectiveness of conservation actions at meeting each team's conservation objectives and landscape level priorities. Each LPDT section is divided by each geographic priority area and its environmental setting, conservation issues and actions, and its relationship to existing management plans and other actions. Some geographic areas are subdivided into smaller priority areas where similar issues and priorities are being addressed.

Part III will be updated annually based on accomplishments and annual reports. Each local team should review Part III annually to ensure the changes in priorities are reflected and that accomplishments not only by WLCI participants but also by other entities and organizations are comprehensively documented.

Sublette Local Project Development Team Priority Areas and Actions

The Sublette Local Project Development Team has identified four geographic priority areas (figure 3-1) to address landscape priorities. Although each of these large areas has unique settings, they share some common themes and issues. These include invasive plants with a focus on cheatgrass (*Bromus tectorum*), use of easements to protect and maintain crucial habitats, restoration and enhancement projects on crucial and transitional habitats, and fence conversions to improve movement of big game species. The Sublette Big Game Corridor Geographic Priority Area addresses big game migration corridors and connectivity at landscape scales. This is accomplished through fence projects and road passage projects for pronghorn (*Antilocapra americana)* and mule deer (*Odocoileus hemionus*), conservation easements, and assessments designed to identify habitat and connectivity issues. The Sublette Invasive Species Task Force Cheatgrass Geographic Priority Area reflects some of the locations in Sublette County where cheatgrass and other invasive plant species are being treated and where assessments are being conducted to evaluate and prioritize future treatment activities. The Upper Green River Valley/New Fork River Geographic Priority Area includes projects designed to improve and protect important migration routes for mule deer and pronghorn, provide and enhance wetlands for trumpeter swans (*Cygnus buccinator*) and other sensitive bird species, improve watershed function to support Colorado River cutthroat trout (*Oncorhynchus clarkii pleuriticus)*; and assessments and treatments to control cheatgrass on crucial habitats. The Wyoming Range East is a large polygon with three subdivided areas (Cottonwood Creek and Horse Creek watersheds, Wyoming Front Aspen Restoration, and Wyoming Range Mule Deer Focus Area) that share many of the same issues and conservation objectives. The Wyoming Range East priority area includes projects designed to: maintain and enhance crucial habitats and migration routes for big game; increase age class diversity, stand structure and species composition associated with aspen, sagebrush (*Artemisia* spp.), and mountain shrub communities; improve watershed function to support populations of the Colorado River cutthroat trout (CRCT); and to conduct assessments and treatments to control cheatgrass and other invasive plants on crucial habitats.

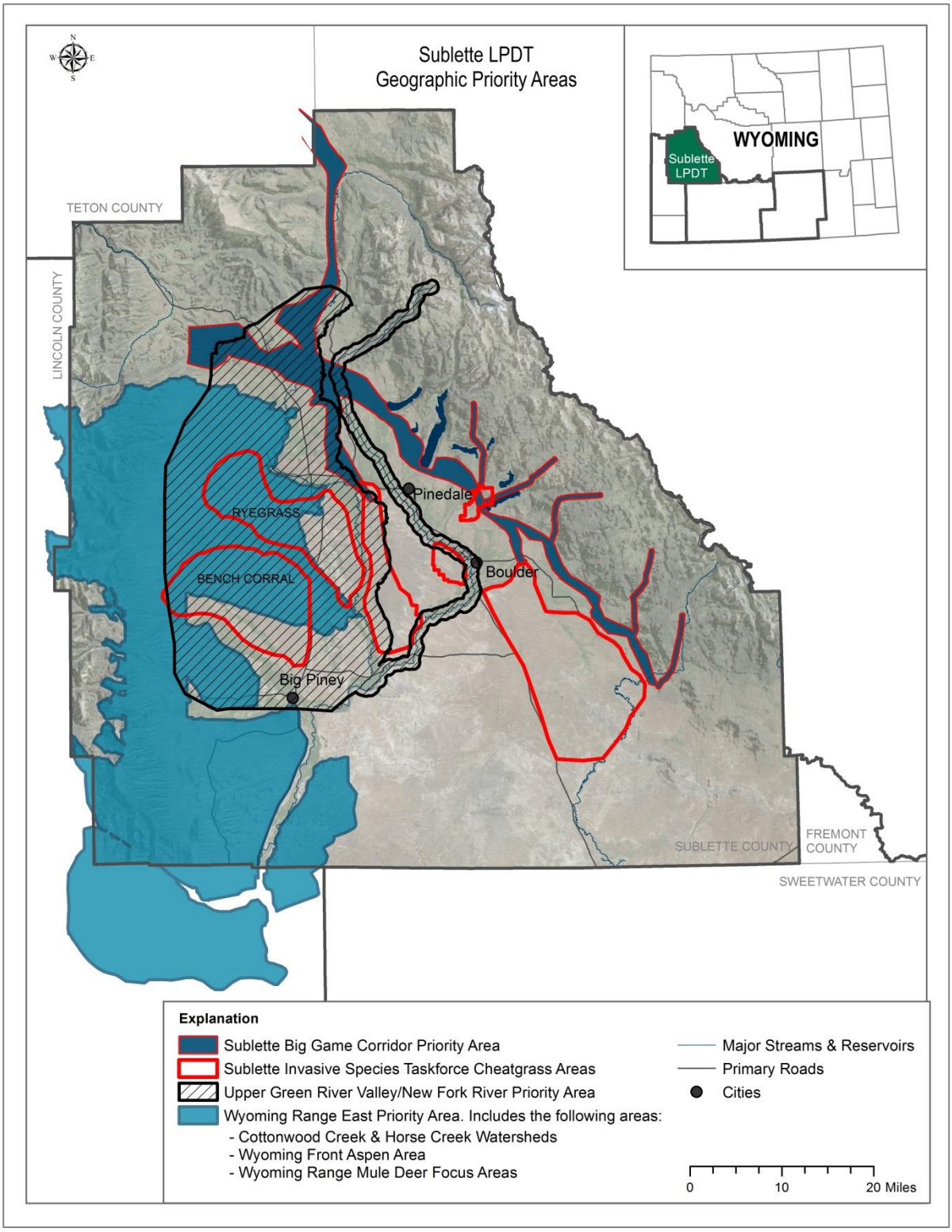

Figure 3-1. Sublette LPDT geographic priority areas.

Sublette Big Game Corridor Geographic Priority Area

Environmental Setting

Wildlife habitat in Sublette County supports some of the largest and most dispersed ungulate populations in Wyoming. The health and maintenance of these herds is largely dependent upon their ability to migrate seasonally from low-elevation winter ranges to high-elevation summer ranges. The Sublette Big Game Corridor Geographic Priority Area (figure 3-2) contains a critically important bottleneck section of the mule deer migration corridor that runs from the Hoback Basin to the Big Sandy River in Sublette County. Over 4,000 mule deer utilize parts of this migration corridor, including an estimated 500 deer that travel a one-way distance of 150 miles from Wyoming's Red Desert to the Hoback Basin. This is the longest mule deer migration route ever recorded. The Sublette Big Game Corridor Geographic Priority Area also includes a large portion of the "Path of the Pronghorn" which is a migration route between the upper Green River Basin and Grand Teton National Park. It is estimated that pronghorn have used this route to move between summer and winter range for more than 6,000 years. Fence conversions and the development of road passes (over and under roads) have successfully been used to maintain this corridor for pronghorn and mule deer. Expanding energy and residential development within and near the priority area has resulted in the loss of habitat and increased fragmentation of crucial habitats. The purchase of conservation easements has been an effective tool to prevent or limit development on nearby crucial habitats. Cheatgrass and other invasive plant species are being address through conservation plans associated with easements and through Sublette County Invasive Species Task Force (*see section narrative for the Sublette Invasive Species Task Force Cheatgrass Geographic Priority Area for more information*). The priority area is composed of mixed federal, state, and private lands.

Issues

- **Migration corridor maintenance and big game passage:** The Sublette Big Game Corridor Geographic Priority Area includes a critically important section of a migration corridor used by pronghorn, mule deer, and elk (*Cervus canadensis*). Older fences in this priority area were not typically designed for safe and efficient passage for wildlife. Many noncompliant fences impede big game passage causing wildlife stress, injury, and mortality. Road crossings, energy development, and residential development fragment important habitats and threaten the ability for big game to migrate seasonally between crucial habitats. Pronghorn face the additional issue of passing through a bottleneck between the New Fork and Green rivers during their migration between Grand Teton National Park and their winter range in the upper Green River Basin.
- Additional issues identified within this priority area include invasive species (cheatgrass), and energy and residential development, all of which contribute to the loss and fragmentation of important big game habitat (*Please see narrative "Sublette Invasive Species Task Force Cheatgrass Geographic Priority Area" for details about projects addressing cheatgrass and other invasive plants in this area*).

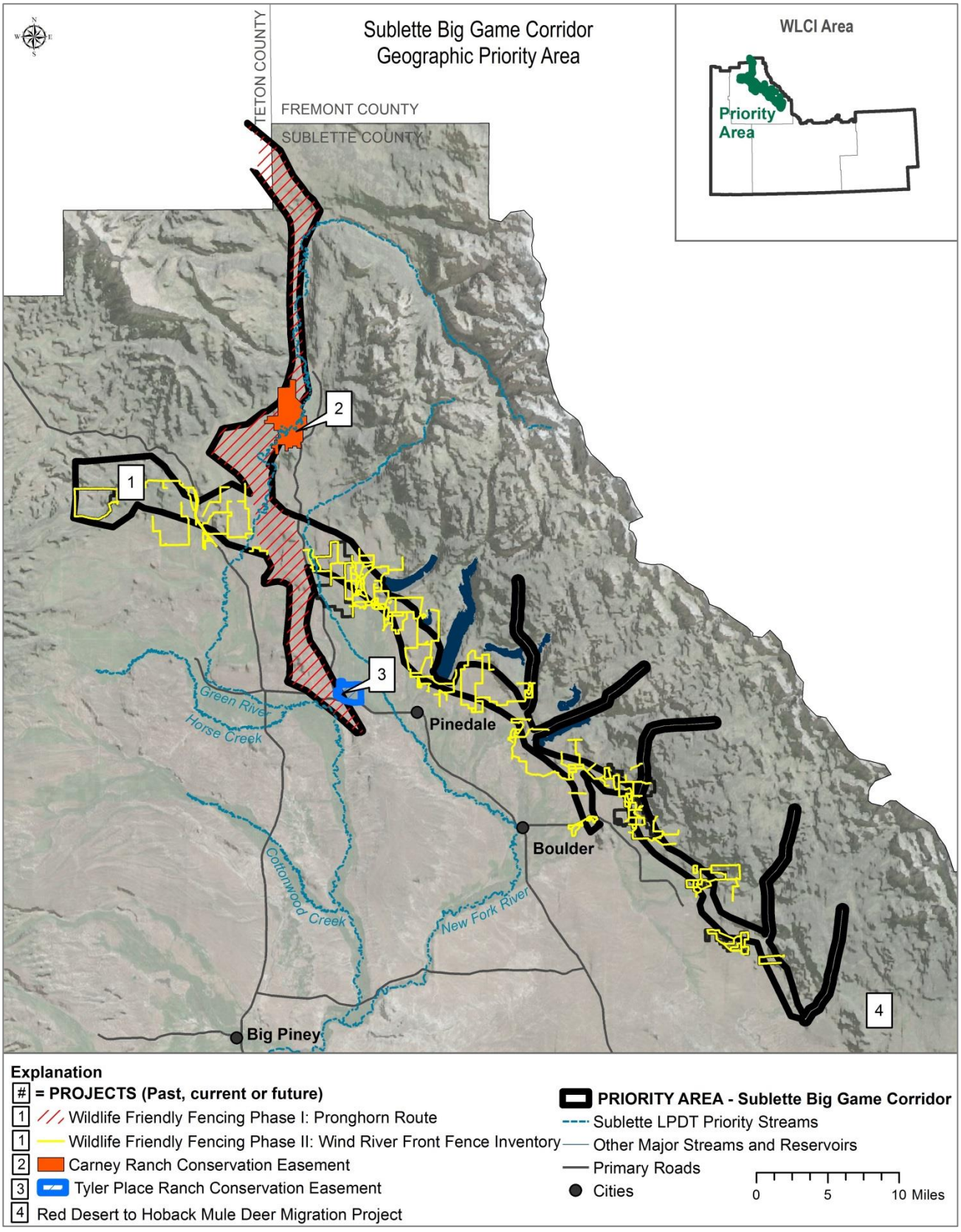

Figure 3-2. Sublette Big Game Corridor Geographic Priority Area and projects

Conservation Actions and Intended Outcomes

1. Wildlife Friendly Fencing Initiative

One important landscape scale effort to convert fencing was initiated by the Green River Valley Land Trust. This multi-year initiative offers cost-free livestock and wildlife-friendly fence improvements to interested landowners within a portion of a key mule deer migration route. This corridor (identified in the *Sublette Mule Deer Study (Phase II): Final Report 2007)* runs from the Hoback Rim to the Big Sandy River in Sublette County, Wyoming, linking important seasonal habitats for mule deer, pronghorn, and other species. Over 4,000 mule deer use the route from the Wind River Range north and pass through this project area. The goal of this initiative is to improve the viability of the mule deer migration route between winter range near Pinedale and summer ranges in portions of the Salt River, Wyoming, Wind River, Gros Ventre and Snake River ranges. The following conservation actions have been identified and/or implemented to achieve this goal:

- Inventory and map fences within route;
- Evaluate which fences most affect mule deer, pronghorn and other big game migration based on criteria developed by project partners (including private landowners and public land managers);
- Modify, reconstruct, and/or remove fences to facilitate better mule deer and other big game movement within the route between summer and winter range; and,
- Monitor mule deer and other big game migration to evaluate the effectiveness of fence projects.

Phase I of the initiative inventoried and modified fences in portions of the pronghorn migration route between the Forest Service boundary and Trapper's Point in Sublette County. In 2009, 80 miles of existing fence were modified within this historic "Path of the Pronghorn" migration route between summer range in and around Grand Teton National Park and winter range in southern portions of Sublette County. During 2012, an additional 202 miles of existing fence were inventoried on both public and private lands and 35 more miles of fencing were modified within the Phase II focus area. There are existing agreements with landowners to modify an additional 102 miles of fence. During 2013, the project lead switched from the Green River Valley Land Trust to Wyoming Wildlife - The Foundation (WW-TF). As of 2014/2015, The Nature Conservancy will reportedly continue with fence modifications and will continue developing agreements in the Phase II project area until fully implemented.

This project addresses the geographic priority area's issues of migration corridor maintenance and big game passage. It reduces wildlife stress, injury, and mortality associated with noncompliant wildlife fencing. It also ensures that access to important habitats is maintained among a complex pattern of fragmented landscapes and habitats associated with these movement corridors. The WYDOT and numerous WLCI partners successfully completed the construction of two overpasses and six underpasses to allow pronghorn, mule deer, and other wildlife to safely cross Highway 191 west of Pinedale, WY. These construction projects were located at the Trapper's Point bottleneck and other nearby locations along the highway where deer/vehicle collisions were occurring. In support of the effort, WLCI helped fund the construction of fences used to funnel big game over two newly constructed overpasses at the Trappers Point bottleneck. Monitoring by the Wildlife Conservation Society indicates that pronghorn and mule deer are using the overpasses and underpasses successfully. Partners involved with these activities include Green River Valley Land Trust, WW-TF, BTNF, Industry, Jonah Interagency Office (JIO), PAPO, RMEF, The Nature Conservancy (TNC), WWNRT, WGFD, WY Department of Agriculture, Western Governors Association, and many NGO's and private landowners.

2. Carney Ranch Conservation Easement

Western Wyoming is home to the longest recorded mule deer migration route. The migration route stretches from Grand Teton National Park, in northwest Wyoming, to the I-80 corridor near Rock Springs, in southwest Wyoming, with documented roundtrips of individual animals over 300 miles. Portions of this migration route are also used by pronghorn to migrate between the Upper Green River Valley and the Greater Yellowstone Ecosystem. Three narrow corridors or "bottlenecks" along the route force animals to pass through narrow topographical constrictions. The Carney Ranch Company property overlaps with the bottleneck located at the northern end of the Green River Valley, which is the only bottleneck that occurs on private lands. The purchase of this conservation easement was completed in 2010 by WLCI and numerous partners. The easement conserves 3,765 acres and protects important wildlife habitat along migration corridors. In addition to addressing the geographic priority area's issue of big game migration corridor maintenance, this easement protects the Green River from possible water quality degradation of

related to development. Partners include the Conservation Fund, WGFD, JIO, Wyoming Land Trust, RMEF, BTNF, WWNRT, and Doris Duke Charitable Trust.

3. Tyler Place Ranch Conservation Easement

The Tyler Place Conservation Easement addresses the priority area's issues of migration corridor maintenance and big game passage. It conserves key migration routes and critical habitat for pronghorn and other big game species. The Sommers-Grindstone Conservation Easement is another easement within Sublette County that maintains migration corridors. A small portion of the Duke Place portion of the easement lies within the Big Game Fence Conversion Priority Area. *Please see narrative for the Upper Green River Valley/New Fork River Geographic Priority Area for project details.*

4. Red Desert to Hoback (RD2H) Mule Deer Migration Project

WLCI partners and members of the Sweetwater and Sublette LPDTs are implementing a two-phase project that addresses the Red Desert to Hoback Basin (RD2H) mule deer migration. This recently discovered 150 mile migration is the longest mule deer migration ever recorded, and the second longest land migration in North America. The first phase (led by the Wyoming Migration Initiative) consists of a threat assessment along the RD2H route. The objective of the threat assessment is to identify and evaluate locations where specific threats and impediments are occurring. Examples of threats and impediments include fences, road crossings, movement bottlenecks, and energy and residential development. The objective for Phase II is for members from the Sweetwater and Sublette LPDTs to use the information collected during Phase I to design, develop, and implement appropriate conservation actions. Conservation actions might include fence modification, purchasing conservation easements, restoring or enhancing important crucial or transitional habitat, informing land use plans and public outreach.

The RD2H assessment was initiated in 2013 and completed during 2014. Tracking of GPS-collared mule deer has occurred since 2011 (Sawyer, Hayes, Rudd, & Kauffman, 2014). Data from this effort was used in the assessment to determine locations where deer movements may indicate possible issues. The assessment combined fieldwork, aerial surveys, data analysis, and mapping. Partners mapped the migration route, inventoried fences, documented land ownership, and identified stopover areas and areas which restrict mule deer migration or could impede their migration in the future. Results were compiled in a written document that includes detailed maps, images, GIS data, threat information, and potential conservation actions (available at *http://migrationinitiative.org/sites/migration.wygisc.org/themes/responsive_blog/images/RDH_Migration_Assessment_Final.pdf*). A National Geographic photographer compiled a series of images and videos that convey the story of the migration to the public. Several receptions were held in 2014 throughout Wyoming to share the results of the threat assessment with WLCI partners and the public. Additional work in 2014 included the collaring of 18 deer for continued monitoring. Ten camera traps were placed along the migration route in an attempt to determine whether remote camera traps would be able to capture the timing, duration, and density of migrating mule deer. If successful, this technique could be utilized by wildlife managers to take proactive management techniques during migration periods. Future plans for 2015 include 1) additional collaring and monitoring of mule deer; 2) deploying remote, high-definition camera traps; and 3) determining the ability to use camera traps to monitor the timing of migrations.

This project has and will continue to address the Sublette Big Game Corridor Geographic Priority Area's issues of migration corridor maintenance and big game passage. It addresses the Sublette LPDT's objective to protect, maintain and enhance important and crucial habitats and corridors for mule deer and other big game species. The assessment provides missing information needed to conserve the RD2H migration corridor. By identifying areas where migration corridors of mule deer are threatened from a host of causes, project leads are able to identify areas where partners can target management activities. Partners have suggested developing road overpasses and/or underpasses on Highway 28 as a long-term solution to address one of the major impediments to migration along this migration route. A large portion of the migration route passes through the Wildlife Friendly Fencing Initiative Phase II project area. Therefore, an opportunity exists to integrate conservation efforts between these projects since noncompliant fencing is considered a major threat to this migration.

Additional Conservation Actions by WLCI Partners

- Eight safe passages have been constructed by the Wyoming Department of Transportation (WYDOT) along a 13-mile stretch of highway. In addition, eight-foot high barrier fencing was placed along the highway to channel animals to the crossing points (partially funded by WLCI). Additional highway overpasses and underpasses are being considered by WLCI partners and the Wyoming Department of Transportation to facilitate pronghorn and other big game crossings during migration. The highway overpass was the first structure of its kind to be used for pronghorn. Structures like this are expected to reduce pronghorn mortality. Scientists from the Wildlife Conservation Society have been monitoring the response of pronghorn and other wildlife use of the structures. Monitoring results will be applied to other road crossing structures under consideration.
- In 2012, the BLM began implementing a four-year project that modifies existing allotment fences to meet BLM/WGFD wildlife friendly fencing standards within big game crucial winter ranges and migration corridors on the Mesa. Fences located within sage-grouse winter concentration areas and those that are near lek locations are being marked with reflectors to increase visibility of the wires to flying grouse.
- The National Fish and Wildlife Foundation's (NFWF) Path of the Pronghorn Conservation Program has supported numerous projects to help pronghorn and other animals migrate more easily. It focuses on efforts to reduce the effects of roads on wildlife, and protect key parcels where subdivision and development threaten the migration corridor. This program has protected more than 40,000 acres of land in the migration corridor and modified or removed 120 miles of problem fencing.

Timeframe: 5 years.

Existing Plans and Strategies

- Sublette Mule Deer Study (Phase II): Final Report, 2007
- National Fish and Wildlife Foundation Executive Summary for the Path of the Pronghorn Business Plan, 2009 (National Fish and Wildlife Foundation, 2009)
- BLM Green River Resource Management Plan (Bureau of Land Management, 1997)
- BLM Pinedale Resource Management Plan (Bureau of Land Management, 2008)
- WGFD Strategic Habitat Plan (Wyoming Game and Fish Department, 2009)
- Sublette County Conservation District's Land Use and Natural Management Long Range Plan 2010-2015 (Sublette County Conservation District, 2010)
- Wyoming Migration Initiative - Threat Assessment for the Red Desert to Hoback (RD2H) Mule Deer Migration (Sawyer, Hayes, Rudd, & Kauffman, 2014), Atlas of Wildlife Migration: Wyoming's Ungulates, Database and Online Viewer

Sublette Invasive Species Task Force Cheatgrass Geographic Priority Area

Environmental Setting

The activities in this priority area are predominantly focused on invasive plant species with an emphasis on cheatgrass. The polygons that make up this priority area (figure 3-3) reflect where invasive species inventories and treatment activities have been or will be conducted. This area includes important habitat for numerous wildlife species, including sensitive species. It contains winter habitat for pygmy rabbits and seasonal sage-grouse habitat (leks, brood rearing, and winter). The Upper Green River Sage-Grouse Local Work Group has identified cheatgrass and invasive plants as a major threat to sage-grouse habitat. The area also falls within a critical elk and mule deer migration corridor, and includes winter range for moose.

The Boulder cheatgrass area is a 4.6 mi^2 project area on the Wind River Range front where the WLCI initially began efforts to control cheatgrass. It borders the northeastern edge of Boulder Lake and stretches approximately three miles west over a combination of private and public land. Cheatgrass control efforts have since expanded to include additional acreage along the Wind River Range front and throughout additional cheatgrass survey areas in

Sublette County (figure 3-3). Concern about the rapid expansion of cheatgrass and other invasive plants in Sublette County spawned the formation of the Sublette County Invasive Species Task Force in 2010. The task force has been conducting surveys and inventories of cheatgrass since 2011. Information from inventories and surveys are being used to guide herbicide applications and other control measures. Since cheatgrass is becoming so ubiquitous, the Sublette LPDT emphasized treatment efforts being targeted at important sage-grouse and mule deer crucial habitats. Interested parties and members of this group include Sweetwater County Weed and Pest (SCWP), BLM, NRCS, Sublette County Conservation District (SCCD), WGFD, industry, and private landowners.

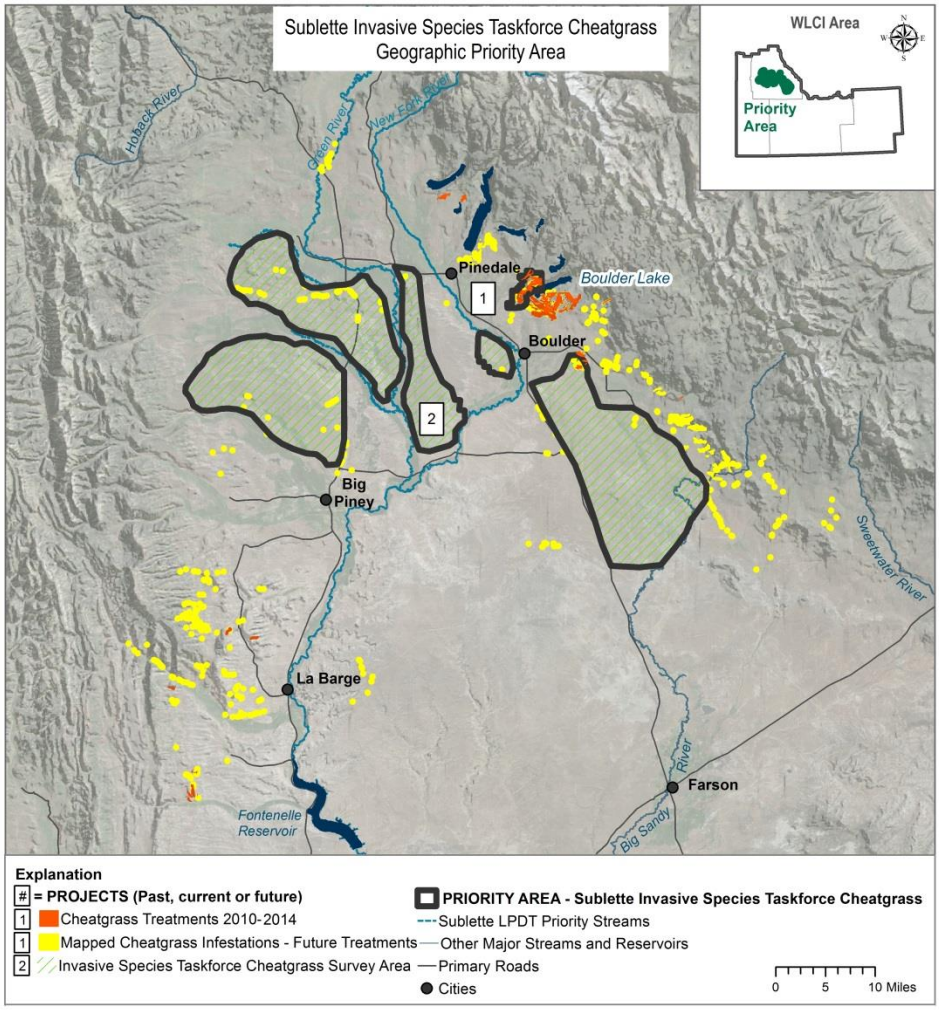

Figure 3-3. Sublette Invasive Species Taskforce Cheatgrass Geographic Priority Area and related projects.

Issues

- **Invasive plant species:** The distribution of cheatgrass has been expanding into the WLCI area. Initially it was thought that cheatgrass would not establish in Sublette County because of the higher elevations. Unfortunately, this was not the case. Cheatgrass has now been documented at elevations over 8,000 feet and is becoming widely distributed and established in Sublette County. The county recognized the importance of this issue and officially declared the invasive a noxious weed in 2014. Cheatgrass (an annual grass) competes with desirable perennial grasses for moisture because of its winter and early spring growth. Upon maturity, cheatgrass quickly dries and becomes very flammable increasing fire risk. Cheatgrass also becomes quickly established after a fire. Combined, these two attributes increase fire cycle frequencies that differ from the fire cycles that have maintained local plant communities. Cheatgrass is not desirable as forage for grazing or wildlife consumption. The cheatgrass along the Wind River foothills is one of the largest known infestations in Sublette County.

- **Critical wildlife habitat:** The Boulder landscape provides critical wildlife habitat for numerous wildlife species in the area, including sensitive species. It provides winter habitat for pygmy rabbit (BLM-designated sensitive species) populations, and winter, lek, and brood-rearing habitat for sage-grouse (a candidate species warranted for listing under the Endangered Species Act). The Upper Green River Sage-Grouse Local Working Group has identified cheatgrass and other invasive plants as a major threat to sage-grouse habitat. The area also falls within a critical elk and mule deer migration corridor, and winter range for moose. The quality of this critical habitat must be maintained to connect seasonal use areas and sustain existing wildlife populations.
- **Migration corridor maintenance and big game passage:** This priority area contains important sections of a migration corridor used by pronghorn, elk, and mule deer. *Please see the narrative for the Sublette Big Game Corridor Geographic Priority Area for additional information*.

Conservation Actions and Intended Outcomes

1. Sublette Invasive Species Taskforce Cheatgrass Treatments This is a phased project in which fall, spring chemical treatments have been used to control cheatgrass on crucial wildlife habitat, and monitoring is used to inform treatment approaches and methods. The BLM Pinedale Field Office and Sublette County Weed and Pest (SCWP) collaborated on this project through funding, treatment implementation (aerial applications), and monitoring of cheatgrass during 2009. WLCI began providing funds for this project in 2010. Initial efforts targeted cheatgrass infestations near Boulder Lake, and treatment areas have expanded since the project's inception. Staff from BLM & SCWP has monitored treatment areas using field measurements. This information indicates that imazapic herbicide provides good control of cheatgrass. A small-scale experiment in cooperation with Dupont® found that Matrix (Rimsulfuroun) and Landmark herbicides also provided good control (SCWP, BLM). With these results, in 2011 a large-scale trial was implemented on BLM and WGFD lands with imazapic and Matrix, respectively. Findings from this effort are being used to modify treatment approaches and treatment dates. Is this correct? Is this trial still going on?

The Sublette Invasive Species Task Force, a partnership with SCWP, BLM, WGFD, WLCI, SCCD, Upper Green River Basin Sage-Grouse Local Working Group and TNC, began conducting surveys in 2011 to identify and prioritize weed infestations in Sublette County rangelands and important habitat for sage-grouse. Figure 3.3 identifies cheatgrass infestations and survey areas. During 2012, the Taskforce used helicopters to treat 1,140 acres of cheatgrass. Three photo point locations and monitoring transects were established in the treatment locations. Surveying continued in 2012 and documented areas of invasion were prioritized. One thousand acres were treated by helicopter during October of 2013. Monitoring was also conducted in 2013 on 2011 and 2012 treatments by Invasive Species Taskforce members, with point line intercepts and photo points. June 2014 monitoring results of point line intercepts and photo points indicated a release of cheatgrass germination in older treatment areas with an increase in moisture. Partners responded by increasing treatment acreage. In the fall of 2014, 4,280 acres were treated with aerial applications of imazapic herbicide at the rate of 8 ounces per acre. Other cheatgrass treatments conducted by SCWP included applications on roads and follow-up backpack applications. Plans for 2015 include spraying at least 1,000 acres and updating the Sublette Invasive Species Taskforce plan. Long-term activities are planned to control cheatgrass to maintain important habitats in this area. Maintenance and improvements provided to this habitat are especially beneficial to species whose seasonal ranges overlap these developed areas (including the Pinedale Anticline and Jonah natural gas fields). The taskforce asks for consistent funding to continue working on the known cheatgrass infestation in the Boulder area and to reach its goal of treating 1,000 acres of cheatgrass annually.

2. Cheatgrass Survey Areas

The Sublette Invasive Species Task Force has conducted surveys through 2013 to document the distribution of cheatgrass and other invasive species in Sublette County. The surveys were primarily focused on sage-grouse core habitat. The surveys conducted during 2011 targeted several large areas within the Upper Green River Valley Priority Area. During 2012, 5,324 acres and 1,610 miles of road were surveyed. In 2013, surveys focused sage-grouse core areas near LaBarge, Wyoming. Surveys and effectiveness monitoring continued in the Boulder area during 2013. Additional surveys were conducted by the SCWP on private lands during 2013. What is planned for the next several years?

Additional Conservation Actions by WLCI Partners

- Partner efforts contributed to the designation of cheatgrass as a Sublette County Declared Noxious Weed in 2014.
- Wildlife Friendly Fencing Initiative: This five-year initiative offers cost-free livestock and wildlife-friendly fence improvements to interested landowners within a portion of a key mule deer migration route. This corridor extends from the Hoback Rim to Big Sandy in Sublette County, Wyoming and links important seasonal habitats for mule deer, pronghorn, and other species. See the Sublette Big Game Corridor Geographic Priority Area section of the CAP as well as the Project Management Plan within the BLM Pinedale Field Office Resource Management Plan for project details.
- A portion of the Threat Assessment for the Red Desert to Hoback (RD2H) Mule Deer Migration Project occurs within the migration corridors that exist in the priority area. *Please see the narrative for the Sublette Big Game Corridor Geographic Priority Area for more details.*

Timeframe: 10 to 20 years

Existing Plans and Strategies

- BLM Pinedale Field Office Resource Management Plan (Bureau of Land Management, 2008)
- Sublette County Conservation District Long Range Plan (Sublette County Conservation District, 2010)
- WGFD Strategic Habitat Plan (Wyoming Game and Fish Department, 2009)
- Wyoming Migration Initiative

Upper Green River Valley/New Fork River Geographic Priority Area

Environmental Setting

The Upper Green River Valley (figure 3-4) lies between the Wind River, Gros Ventre and Wyoming ranges within Sublette County. The sagebrush-dominated valley provides crucial winter range for numerous big game species including pronghorn that travel one of the longest remaining terrestrial mammal migrations in North America between the Upper Green River Valley and Grand Teton National Park. This priority area includes the Ryegrass and Bench Corral winter complex areas; a narrow big game corridor between the Green and New Fork rivers with a migration bottleneck at Trappers Point; and numerous aquatic, riparian, and wetland areas that provide habitat for sensitive Colorado River cutthroat trout and five bird species of special concern including reintroduced trumpeter swans. Sagebrush habitats in this area support the largest population of greater sage-grouse within WLCI boundaries. Ecotones between sagebrush steppe and grassy wetlands provide habitat for over two-dozen rare or endangered plant species. The New Fork River corridor consists of approximately 50 miles of contiguous aquatic and riparian habitat that supports a wide variety of aquatic and terrestrial wildlife. The majority of the land between New Fork River and the Green River is privately owned with agriculture being the primary land use. The river is used extensively for irrigation and stock watering. Portions of the New Fork and Green rivers run through the Pinedale Anticline, one of the largest natural gas fields in the nation.

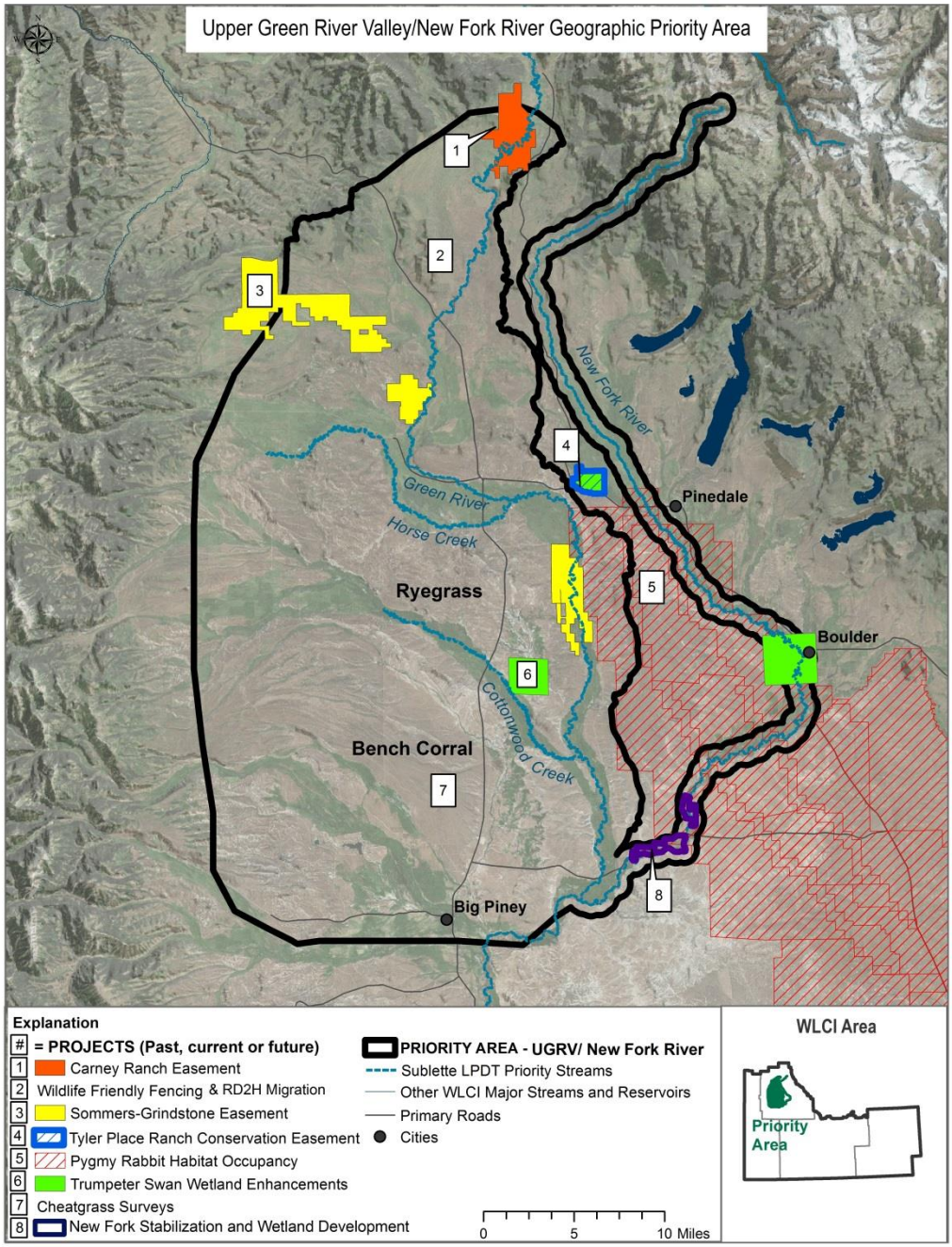
Upper Green River Valley/New Fork River Geographic Priority Area
1
2
3
4
5
6
7
8
New Fork River
Green River
Horse Creek
Cottonwood Creek
Ryegrass
Bench Corral
Pinedale
Boulder
Big Piney
Explanation
= PROJECTS (Past, current or future)
1 Carney Ranch Easement
2 Wildlife Friendly Fencing & RD2H Migration
3 Sommers-Grindstone Easement
4 Tyler Place Ranch Conservation Easement
5 Pygmy Rabbit Habitat Occupancy
6 Trumpeter Swan Wetland Enhancements
7 Cheatgrass Surveys
8 New Fork Stabilization and Wetland Development
PRIORITY AREA - UGRV/ New Fork River
Sublette LPDT Priority Streams
Other WLCI Major Streams and Reservoirs
Primary Roads
Cities
0 5 10 Miles
WLCI Area
Priority Area

Figure 3-4. Upper Green River Valley/New Fork River Geographic Priority Area and related projects.

Issues

- **Invasive plant species:** Invasive plant species such as perennial pepperweed (*Lepidium latifolium*) and cheatgrass are expanding their distribution and increasingly becoming more responsible for degrading and fragmenting important habitats. SCWP has identified the confluence of the New Fork and Green rivers as a high priority area to address perennial pepperweed invasion. The Sublette Invasive Species Task Force has prioritized several large areas within the Upper Green River Valley and other locations for cheatgrass control.
- **Habitat fragmentation:** Fragmentation is an issue for both aquatic and terrestrial habitats in this priority area. Numerous irrigation diversions, ditches, and structures throughout this area may limit fish populations by preventing access to necessary habitats during different life stages. Invasive species, energy, and residential development continue to fragment terrestrial habitats and movement corridors in this priority area.
- **Sensitive wildlife species:**
  - The pygmy rabbit is a sagebrush obligate species that that is found primarily in big sagebrush (*Artemisia tridentata*) and rabbitbrush (*Chrysothamnus* and *Ericameria* spp.) dominated communities. The species' low density and sensitivity to sagebrush fragmentation have contributed to the listing of the pygmy rabbit as a BLM sensitive species. Loss of sagebrush and herbaceous plant species, increased densities of invasive plants, roads, and infrastructure related to energy and residential development have contributed to the increased fragmentation of sagebrush communities in this area.
  - The trumpeter swan, a WGFD priority species, was reintroduced to the Green River Basin in the mid 1990's. Early spring habitat and nesting habitat for the trumpeter swan is limited in southwest Wyoming. Ongoing drought conditions are affecting these habitats making them even more uncommon. Additional threats to resident trumpeter swans include increasing competition from wintering migrant swans for available winter habitat and human disturbance during nesting periods. Although there are numerous natural and constructed wetlands in the upper Green River Basin, relatively few wetlands are appropriate in size to provide security and food resources needed to support a producing pair and raising young to flight (which requires 160-180 days). Adequate shallow water wetland habitat must be available in future years to sustain a growing number of resident swans inhabiting this priority area.
  - The BLM Pinedale Field Office has been monitoring declining raptor populations, especially the ferruginous hawk (*Buteo regalis*) which is listed as a BLM species of concern.
- **Water quality:** Hydrocarbons, including known carcinogens such as benzene, have been detected in groundwater at concentrations that exceed state and federal water quality criteria within the Pinedale Anticline drilling area (Allen, 2009). Surface waters within the Pinedale Anticline area have not been monitored extensively for hydrocarbons. However, there is the potential for hydrocarbons to enter surface water within the priority area through several sources associated with oil and gas activities. The Green River upstream from the New Fork River confluence to the Bridger Wilderness boundary is designated by the Wyoming Department of Environmental Quality (DEQ) as class 1 water, identifying the importance of protecting its outstanding features (Wyoming Department of Environmental Quality, 2001).

- **Migration corridor maintenance and big game passage:** The Upper Green River Valley/New Fork River Geographic Priority Area includes a critically important section of a migration corridor used by elk, mule deer, and pronghorn. Non-wildlife compliant fences impede big game passage sometimes causing wildlife stress, injury, and mortality. Road crossings, energy development, and residential development also threaten the ability for big game to migrate seasonally between crucial habitats. Pronghorn face the additional issue of passing through a bottleneck between the New Fork and Green rivers during their migration between Grand Teton National Park and their winter range in upper Green River Basin.
- **Degradation of woody riparian species:** WGFD partners have observed that willow recruitment to medium and mature age classes is inconsistent and appears to be limited by browsing impacts. Cottonwood reestablishment is uncommon, and recruitment to medium and mature age or height classes is not occurring at sustainable rates. Existing cottonwood galleries are mature with dying canopies and lack diverse horizontal or vertical structure.

Conservation Actions and Intended Outcomes

1. Carney Ranch Easement

The Carney Ranch forms one of the most important properties along the pronghorn's migration bottleneck. This property is considered vulnerable from rapidly expanding energy and residential development. This easement was purchased to protect and maintain habitat for sage-grouse, mule deer, elk, moose, antelope, trumpeter swans, amphibians, songbirds, and other species. This easement also protects essential migration routes for pronghorn, elk, and mule deer and addresses water quality issues by protecting the priority area's class 1 water from degradation, which is recognized for its outstanding features. *Please see this easement's narrative in the Sublette Big Game Corridor Geographic Priority Area section for more information.*

2. Wildlife Friendly Fencing Initiative and Red Desert to Hoback Mule Deer Migration Project

These projects address the geographic priority area's issues of habitat fragmentation, migration corridor maintenance and big game passage by assessing threats to migrating mule deer and converting fencing to meet wildlife friendly standards. *Please see project narratives in the Sublette Big Game Corridor Geographic Priority Area section for more information.*

3. Sommers-Grindstone Conservation Easement This project involved acquiring a conservation easement of about 19,000 acres along the Green River and tributaries in Sublette County in 2010. The easement protects the area from surface development and protects over 47,000 acres that support numerous species (including sage-grouse, moose, mule deer, pronghorn, and non-game species), and big game migration corridors. This easement also protects designated class 1water resources from degradation related to further development. The Sommers-Grindstone Wildlife Values report (Stroud, 2010) provides a summary of important habitat values for this easement. The specific objectives of the Sommers-Grindstone Conservation Project are to:

- Maintain economically viable agriculture operation units as working ranches for the future;
- Maintain and enhance the natural resources located on the operating units to sustain or improve wildlife habitat using the livestock and agricultural operations as a tool;
- Balance wildlife habitat needs with the need for economic sustainability of the distinct ranching units;
- Preserve open space and prevent conversion of upland rangeland to croplands;
- Work closely with WGFD and NRCS on future sagebrush treatments and manipulations to achieve designs that reflect the most current research/science beneficial to sage-grouse habitat;
- Conserve wildlife migration corridors with minimal impediments. Convert restrictive existing fencing to wildlife friendly fencing based upon recommendations by NRCS and WGFD; and,
- Improve the woody component of riparian areas through livestock grazing practices.

This project addresses the geographic priority area's issues of habitat fragmentation, sensitive wildlife species, water quality, woody riparian species degradation, migration corridor maintenance and big game passage. The project includes a conservation agreement to protect existing sagebrush communities and modification of fences, conveyance of mineral rights to WGFD, and relinquishment of 150 AUMs on the Mesa Common Allotment until

after Anticline development is completed. Implementation of alternatives and practices will be phased in over many years.

4. Tyler Place Conservation Easement

This project involves the purchase of a conservation easement on 1,600 acres by the Wyoming Land Trust (WLT). It seeks to conserve valuable wildlife habitat, key migration routes, working ranchland, and important open spaces. This property functions as a working ranch and provides important habitat for wildlife including pronghorn (spring-summer-fall habitat), mule deer (migration routes and spring-summer-fall habitat), elk (winter range), waterfowl, and a variety of Wyoming's Species of Greatest Conservation Need. The project includes approximately 2 miles of Duck Creek and associated riparian areas. It also encompasses a swan pond that the landowner constructed in coordination with WGFD using funds from WWNRT. The project neighbors the WGFD Duck Creek Public Access Area, lies within WGFD's Wind River Front crucial terrestrial priority area, and lies within a sage-grouse core area. According to WGFD's Strategic Habitat Plan (Wyoming Game and Fish Department, 2009), the Wind River Front crucial terrestrial priority area provides habitats and migration routes crucial to pronghorn, mule deer, elk, moose, sage-grouse, and waterfowl species. WGFD specifically identifies conservation easements as a "solution" to address the threats to wildlife in this area.

This conservation easement addresses the Upper Green River Valley/New Fork River Geographic Priority Area's issues of habitat fragmentation, sensitive species, migration corridor maintenance, and big game passage. The project may also conserve other unique habitat types or imperiled vegetative species/communities located in Sublette County, such as certain Plant Species of Concern included on the University of Wyoming's Wyoming Species of Concern List.

5. Pygmy Rabbit Habitat Occupancy Survey and Accuracy Assessment

This project is a collaborative effort and part of a much larger research project investigating potential impacts of gas development on pygmy rabbits. The BLM aims to measure the probability that a given level of sign equates to a live rabbit utilizing a burrow complex at time of survey. The population dynamics and habitat requirements of pygmy rabbits are not well understood, especially in Wyoming where they are considered a species of concern. While several surveys are conducted each year, there are still many uncertainties related to the use of burrow complexes. With the use of cameras to verify levels of use as it pertains to sign around burrows, pygmy rabbit survey data can be applied more accurately to management decisions.

Infrared-activated cameras have been placed on the Pinedale Anticline (and portions of the Jonah Field and Boulder Landscape Area) near known pygmy rabbit burrow complexes exhibiting various levels of sign to draw correlations between those levels and rabbit presence/absence. In 2010, a pilot study successfully completed the objectives described in the project outline of the 5 year BLM Wyoming Pygmy Rabbit Survey Cooperative Agreement, with specific camera brands and capabilities explored and selected. The WLCI provided funding for the purchase of new camera equipment to provide additional camera traps in 2012. Fieldwork in 2012 and 2013 yielded hundreds of photographs of pygmy rabbits, with documentation of overlapping use of the same burrow by both pygmy and cottontail rabbits. Data collection, analysis, and additional camera purchases are scheduled through February 2015, with a final report submission scheduled for March of 2015. The correlation between the information collected with the cameras and the survey data can be applied to all past and future pygmy rabbit survey results and can be used to monitor the pygmy rabbit population on the Pinedale Anticline Project Area.

This project addresses the geographic priority area's issues of habitat fragmentation and sensitive wildlife species. It benefits the BLM by addressing the fundamental question of whether pygmy rabbit habitat occupation is influenced by natural gas development and by providing information necessary to design effective conservation and mitigation strategies. It also serves as a significant contribution to the scientific understanding of pygmy rabbit survey methodology and the species' vulnerability to different forms of habitat alteration and human disturbance.

6. Trumpeter Swan Habitat Enhancements

The primary objective of this ongoing project is to construct, restore, and enhance shallow water wetland ponds suitable for nesting and foraging by trumpeter swans in the Green River Basin. The trumpeter swan is a WGFD Priority Species 1 in the state. Due to range expansion efforts, new pairs have established in the Green River Basin and production of cygnets has increased. To ensure adequate shallow water wetland habitat will be available for the growing number of resident swans, WGFD initiated a habitat planning project in 2003 to 1) identify and survey potential swan summer habitat on private and public lands in the Green River Basin; 2) prepare site management plans for high priority wetland projects; and 3) identify potential funding partners so priority projects can be completed in a timely fashion to keep ahead of swan habitat needs. Projects funded by the WLCI contribute to this long-term effort by establishing additional shallow water wetland habitat for resident trumpeter swans and other wetland dependent avian species in southwest Wyoming such as migratory shorebirds, waterfowl, and brood-rearing sage-grouse.

Since 2007, over 50 acres of wetland habitat has been constructed on private lands south of Pinedale funded by WLCI and other partners. The WLCI has funded trumpeter swan habitat enhancements on Rimfire Ranch and Swift Ranch since 2008. Enhancements on the Swift Ranch include the creation of 5.5 acres of shallow water foraging and nesting habitat adjacent to the New Fork River, and the building and installation of two nesting islands on the Swift Ranch reservoir. The Swift Pond was constructed in 2010 and filled in the spring of 2011. A pair of swans produced four young and an additional adult pair was observed in September 2011 on the Swift Pond. In 2012, work included construction of an island for nesting, installing a head gate on a feeder to the pond, and final reclamation and cleanup. Four wetland ponds were constructed on the Rimfire Ranch near Daniel, WY between 2008 and 2010. The ranch lies in a major flyway for trumpeter swan and other waterfowl. The fortification of a dike on Rimfire Ranch was completed in 2012, and pre-planted vegetation mats were installed. In 2014, a grant agreement was completed with Rimfire Ranch to complete work to fortify a dike on the Sago Pond, fix the Agridrain as needed on the Trumpeter Pond, and replace pipes and rework dikes as needed on the two ponds. Plans to correct design flaws in the Trumpeter and Sago ponds were postponed from 2014 to 2015 due to wet summer conditions. The USFWS Partners Program is collaborating with WGFD on continuing work at the Rimfire Ranch as well as the Lazy River Ranch.

In 2013, a new five-year agreement between WLCI and WGFD was approved and wetland plans were developed at a site on a major flyway and nesting area on Lazy River Ranch. Preliminary designs for the construction of two wetland ponds using old oxbow channels adjacent to the New Fork River were approved by the landowner during 2013. In 2014, NEPA, permitting and design work was completed for the two ponds and the 12-acre Homestead Pond was constructed and filled on the Lazy River Ranch. Outreach included a field tour with the Intermountain Joint Venture board and presentations at the Wyoming Wildlife Society meeting and the Jackson Hole Wildlife Symposium. Monitoring conducted in 2014 consisted of site visits to existing ponds and three aerial surveys of the trumpeter swan population in the Green River Basin. WGFD will continue to monitor these ponds for wildlife use and vegetation establishment. In addition to monitoring, future plans include repair work on Rimfire Ranch, potentially building a second pond on Lazy River Ranch, and assessments that are designed to characterize wetlands used for nesting by the expanding population of resident Trumpeter Swans in the Green River Basin. Outcomes of these assessments will be used to augment existing wetland habitats and to improve designs for future development projects.

The Trumpeter Swan Habitat Enhancement Project addresses the priority area's sensitive species issue of limited early spring and nesting habitat for trumpeter swans. It supports the Sublette LDPT in meeting its objectives to create, restore and maintain wetlands for trumpeter swans and other wildlife species. In addition to supporting the pond constructions mentioned above, the WLCI aims to protect existing trumpeter swan habitat. The Tyler Place Conservation Easement (see project #4) conserves and maintains existing swan habitat including the Duck Creek Pond wetland project site. Project partners include landowners, WGFD, USFWS, WWNRT, Upper Green River Grazing Association, Ducks Unlimited, and BLM.

7. Cheatgrass Survey Area

The Sublette Invasive Species Task Force initiated surveys beginning in 2011 to inventory and map weed infestations (including cheatgrass) within Sublette County primarily within sage-grouse core habitat. The surveys

have targeted several large areas within the Upper Green River Valley - New Fork Geographic Priority Area. This information is being used to plan and implement treatments to control cheatgrass at landscapescales. *Please see the Sublette Invasive Species Taskforce Cheatgrass Geographic Priority Area narrative for project information.*

8. New Fork Stabilization and Wetland Development

In 2014, the Sublette County Conservation District and partners proposed to create or enhance approximately 8 acres of seasonal floodplain wetlands on private land near the New Fork River. A rock or earthen "check-dam" to control gradient and prevent further downcutting in gullies on the floodplain will create or enhance wetlands that will store overbank flood flows. In addition, approximately 1/4 mile of river streambank is planned for restoration through the construction of four rock j-hook jetties and a riparian vegetated bankfull bench. Objectives and actions include:

- Stabilize 1/8 mile of streambank to preserve 1 mile of stream channel and associated riparian and first terrace habitat, including cottonwood *(Populus sargentii)* galleries;
- Create approximately 8 acres of wetland habitat by installing as many as 4 low dikes, creating up to 4 open water ponds with approximately 900 meters of wetland shoreline;
- Protect newly created wetland and rehabilitated streambank habitat by installing approximately 1 mile of fencing; and,
- Seed, sprig, or transplant riparian vegetation as needed on 8 acres of wetland and up to 1/2 mile of riverbank.

In the spring of 2014, water control structures were installed in the threatening incision, enabling inundation of the objective wetland area. Unfortunately the structures failed when they were overwhelmed by high runoff. Re-engineering and fencing installation were completed by the end of the year. In November of 2014, project leads were awaiting the arrival of an Army Corps of Engineers permit to begin streambank restoration work including the bankfull bench. Planned future actions include fixing the check-dam, installing the bankfull bench and j-hooks, and restoring vegetation. Revegetation and monitoring will be conducted with involvement from partners including FWS, WGFD, and NRCS. The landowner is working with partners to establish a long-term grazing management plan and fence protection for the site that will promote site stabilization and desired plant species at the project site.

This project addresses the priority area's issues of habitat loss and degradation as well as sensitive wildlife species conservation. It alleviates the immediate threat to the instream, riparian and wetland habitat at this site, which is the river channel steepening and incising that will occur if the river cuts off the meander and consequently decreases its length by one mile. The development of new wetland acreage will provide habitat needed for the growing number of resident trumpeter swans inhabiting the priority area as well as other Species of Greatest Conservation Need, migratory birds and native and sport fish species. It will improve late-season brood rearing habitat for sage-grouse as well. This portion of the New Fork River is within the Green River Wetland Conservation Priority Area identified by numerous partners in the "Wyoming Wetlands: Conservation Priorities and Strategies" due to the density of wetlands and the abundance and diversity of wetland-dependent wildlife in the area (Copeland, et al., 2010). Partners include private landowners, FWS – Partners for Fish and Wildlife, WWNRT, NRCS, and WGFD.

<u>Additional Conservation Actions by WLCI Partners</u>

- Investigating the Potential Influence of Natural Gas Drilling Wells on Surface Water in the Pinedale Anticline: Researchers at the USGS Columbia Environmental Research Center (CERC) are conducting a study to identify groundwater sources to the New Fork River. Waters associated with natural gas drilling are often saline, and with corresponding high electrical conductivity. Identifying groundwater inputs to surface waters in the New Fork River will allow future monitoring for hydrocarbons and other contaminants associated with natural gas drilling activities. The study design and planning began in 2013 and in 2014 float and ground surveys were conducted over 13 miles of the New Fork River. The electrical conductivity of spring sources and side channels were identified using conductivity probes and the location of each site was recorded using a handheld GPS. Electrical conductivity will be monitored at six sites using data logging conductivity meters for one year to identify potential pulses of high conductivity water. Monitoring will be completed by the spring of 2016.
- The USGS conducts several pygmy rabbit studies that relate pygmy rabbits to landscape condition in the WLCI area, and collaborates with partners including the Pinedale and Kemmerer BLM Field Offices, WGFD Green

River Region, The Nature Conservancy (TNC), and the Wyoming Natural Diversity Database (WYNDD). Collectively, the projects intended to fill major knowledge gaps about the habitat conditions required by pygmy rabbits in Wyoming. They are:

- Assessing the potential for overlap between wind energy development and pygmy rabbits
- Validating two existing (WYNDD and TNC) pygmy rabbit distribution models
- Developing a new pygmy rabbit distribution model for Wyoming
- Identifying the effects of gas field development density on pygmy rabbit occupancy and abundance
- Using LiDAR technology to map pygmy rabbit habitat in the Rock Springs and Pinedale Field Office areas
- Monitoring the effect of development of the NPL gas field on pygmy rabbits
- Evaluating the relationship among pygmy rabbits, their habitat, and gas field infrastructure in Lincoln and Uinta counties
- Investigating methods of attaching GPS technology to pygmy rabbits (a pilot study)

- Sublette County Conservation District Water Quality Monitoring: SCCD has conducted surface water quality monitoring on the New Fork River since 2000 and on the Green River since 2001. A "Sampling Analysis Plan" (SAP) approved by the WY Dept. of Environmental Quality (DEQ) is in effect for water quality monitoring efforts within the SCCD. Physical, chemical, and biological parameters are being measured or collected. Macroinvertebrates are being monitored on the New Fork River as an indicator of stream health. Since 2001, the SCCD has also sampled water wells associated with a gas well to establish a baseline for water quality and to monitor existing conditions for changes in both surface and ground water in Sublette County.
- The BLM Pinedale Field Office and the Pinedale Anticline Project Office (PAPO) have proposed to plant cottonwood trees to support declining raptor species along select sections of the New Fork River and on Cottonwood Creek.

Timeframe: 10 to 30 years

Relationship to Existing Plans and Strategies

- All WGFD shallow water wetland pond construction and restoration projects have been developed as part of WGFD's long-term Upper Green River Basin Trumpeter Swan Summer Habitat Project
- BLM Pinedale Resource Management Plan (Bureau of Land Management, 2008)
- Pacific Flyway Implementation Plan for the Rocky Mountain Population of Trumpeter Swans (Pacific Flyway Study Committee, 2002)
- Pacific Flyway Management Plan for the Rocky Mountain Population of Trumpeter Swans (Subcommittee on Rocky Mountain Trumpeter Swans, 2012)
- Sommers-Grindstone Wildlife Values Report (Stroud, 2010)
- Sublette County Conservation District Long Range Plan (Sublette County Conservation District, 2010)
- USFWS Partners Program
- WGFD State Wildlife Action Plan (Wyoming Game and Fish Department, 2010)
- WGFD Strategic Habitat Plan (Wyoming Game and Fish Department, 2009)

Wyoming Range East Geographic Priority Area

Environmental Setting

The Sublette LPDT Team has identified the entire eastern front of the Wyoming Range, from South Rim near Hoback Canyon, south to Commissary Ridge in Sublette and Lincoln Counties, as a priority area. This area was selected primarily due to their importance to Wyoming Game and Fish under their Strategic Habitat Plan (SHP). WGFD identified both Crucial Habitat and Enhancement Habitat areas within the eastern section of the Wyoming Range. This priority area is divided into three smaller areas based on LPDT suggestions to help focus areas where there are similar issues and conservation actions. These are 1) Cottonwood Creek and Horse Creek watersheds, 2) the Wyoming Front Aspen Enhancement Area, and 3) the Wyoming Range Mule Deer Plan Focus Areas (figure 3-5).

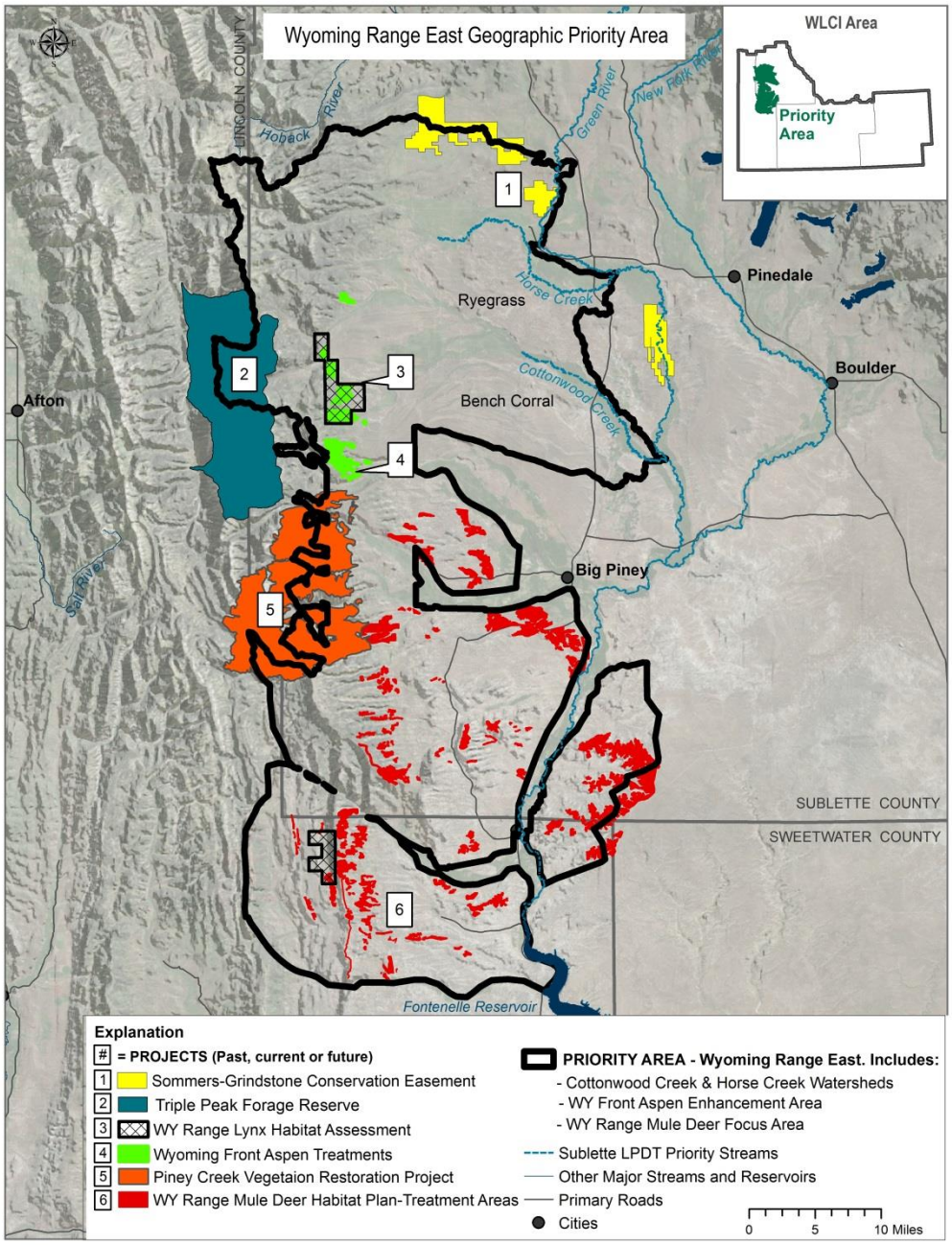

Figure 3-5. Wyoming Range East Geographic Priority Area and related projects.

A. Wyoming Range East – Cottonwood Creek and Horse Creek Watersheds

Issues

- This priority area faces many of the same issues as the Wyoming Front Aspen Enhancement area mentioned below (see section B – Wyoming Front Aspen Enhancement Area – Issues for details on aspen community health, excessive ungulate browsing, and sensitive or threatened wildlife species). Additionally, this area contains habitat values that warranted WGFD's designation as a crucial habitat.
- **Sensitive fish species:** Several Colorado River cutthroat trout populations inhabit tributary streams west of the Green River including Horse Creek and Cottonwood Creek. This sensitive species is threatened by competition with nonnative sport fish. Restoration activities are designed to restore CRCT in these watersheds and to keep their genetic strain pure.

- **Shrub community health:** Lower elevations are dominated by sagebrush, desert shrub, and mountain shrub communities that lack stand diversity and composition. Conservation efforts are planned to diversify these communities and to increase regeneration and forage for mule deer and other big game species. These activities are being prioritized at locations associated with spring transitional range and crucial winter range, and along migration routes.
- Sagebrush habitats in this area provide year-round habitat requirements for sage-grouse. Some of these habitats are associated with sage-grouse core areas.

Conservation Actions and Intended Outcomes

1. Sommers-Grindstone Conservation Easement

This easement protects valuable wildlife and fisheries habitat in the Horse Creek Watershed and addresses the priority area's issue of shrub community health. Treatments and manipulations are planned to improve sagebrush condition and to benefit sage-grouse and big game habitat. *Please see narrative in the Upper Green River Valley/New Fork River Geographic Priority Area for more information.*

2. Triple Peak Forage Reserve

The Triple Peak Forage Reserve was established on U. S. Forest Service lands in Sublette and Lincoln counties through an assistance agreement between Trout Unlimited and the WLCI in 2008. The objectives of this forage reserve are to 1) facilitate and ensure the long-term, sustainable health of vegetative communities; 2) facilitate future treatments to benefit fish and wildlife habitats, including several populations of sensitive and threatened species; and 3) accelerate the improvement of watershed/vegetative conditions in upland and riparian habitats on 58,657 acres throughout the project area. This project provides an opportunity to restore the tall forb, aspen and riparian communities through rest from grazing and improved livestock management. Restoration of these plant communities reduces sediment inputs into area streams, benefitting native trout and the assemblages of other native aquatic species inhabiting these streams. The area contains important summer range and parturition habitat for the Wyoming Range mule deer herd unit, which is currently the largest herd unit in the state, and provides both summer and parturition habitat for a portion of two distinct elk herd units.

Trout Unlimited, WGFD, the USFS, and permittees collaborated to implement the project and provide funding and monitoring efforts. In 2008, the "Final Allotment Management Plan for the Triple Peak Forage Reserve" was approved by the USFS. In order to fully implement the forage reserve, the permitee has agreed to waive his grazing permits and allotments have been closed to scheduled use. Future grazing management within the forage reserve will emphasize achieving or maintaining the vegetation communities in healthy and diverse natural ecological condition primarily to benefit wildlife and watershed health, while providing for grazing by domestic sheep consistent with the improvement of wildlife habitat and resource conditions. USFS and WGFD developed a long-term monitoring program based on five-year cycle to evaluate recovery of tall forb communities.

This project addresses the priority area's issues of aspen community health, shrub community health, excessive ungulate browsing, and sensitive fish and wildlife species conservation. It contributes to the restoration of functioning watersheds in the project area. Not only are fish and wildlife habitats enhanced and protected, but hydrologic and geomorphologic processes are allowed to function naturally. This enhances riparian condition, floodplains and overall ecological conditions. Furthermore, improved function and conditions in these headwater drainages ultimately benefit the ecological conditions and aquatic habitats in the entire lower sections of these watersheds. This project serves to fulfill goals of the WGFD Strategic Plan and CRCT Restoration Program.

B. Wyoming Front Aspen Enhancement Area

Issues

- **Aspen community health:** In 1990, a forest health survey conducted by the Pinedale BLM reported that 3,000 acres of aspen were considered to be at risk from encroaching conifers. During the summers of 2000 and 2001, Wyoming Game and Fish personnel prioritized stands based on approaches developed by Campbell and Bartos (2001). Seventy-four percent of the sites fell within the high priority category. Aspen communities throughout the priority area lack regeneration and are dominated by conifer and sagebrush. This team has identified a Wyoming Front Aspen Enhancement Area between North Cottonwood Creek and LaBarge Creek on BLM and private lands as a high priority for enhancement efforts. This area provides crucial winter range for elk, mule deer, and moose, migration routes for mule deer, elk, moose, and pronghorn, and transitional range for mule deer.
- **Excessive ungulate browsing:** The Wyoming Front Aspen Enhancement Area contains many aspen stands where aspen suckers are not growing above herbivory heights. This results in a decrease in diverse establishment rates and loss of sustainable regeneration. This area is used by mule deer and elk as a transitional and summer habitat. Elk use this area as they travel to and from managed feedgrounds (Jewett, North Piney, and Finnegan).
- **Sensitive or threatened wildlife species:** Moose (SGCN) and Canada Lynx (threatened) exist in the area. Treating conifer-encroached aspen on Forest Service land has proven to be difficult due to issues with lynx habitat and threshold requirements. Where treatments are allowed, conservation actions are directed at developing diverse, healthy aspen stands, increasing vegetation cover and forage for moose and snowshoe hare, reconnecting fragmented lynx habitat, and protecting and improving suitable lynx habitat.

Conservation Actions and Intended Outcomes

3. Lynx Habitat Assessment

This assessment will inform WLCI partners about how aspen treatments may influence local snowshoe hare populations. The Wyoming Range includes the southernmost portion of lynx habitat in North America, and habitat alterations from the Wyoming Front Aspen Regeneration Project (WYFARP) and the Wyoming Range Mule Deer Habitat Project have the potential to influence lynx habitat. In 2012, monitoring activities were initiated to evaluate treatments conducted during 2011 that were either burned or slashed, or not treated. The study was designed to 1) establish baseline data on horizontal cover and snowshoe hare populations in the different area types; and 2) monitor aspen regeneration after treatments. The monitoring study design included 50 permanent snowshoe hare pellet plots within the Camp Creek prescribed burn area 1-year post burn and 50 permanent snowshoe hare pellet plots within the proposed Miller Mountain prescribed burn area. Additional data collected at each of the above locations included stand measurements, snowshoe hare browse, horizontal cover, and photo points. In the Camp Creek prescribed burn area the plots were split among: slashed but unburned, burned, and un-slashed unburned. Monitoring continued through 2013.

This project is addressing the priority area's issues of threatened wildlife speices and aspen community health. Information gathered from the project is being used to determine the best aspen treatment methods and where to treat forested areas in the Wyoming Range that support snowshoe hare.

4. Wyoming Front Aspen Restoration Project

There are 38,000 acres of forested lands managed by the BLM in the Wyoming Range foothills, and 12,000 acres are dominated by aspen. A forest health survey conducted by the Pinedale BLM Field Office in 1990 reported that 3,000 acres of this aspen habitat were at risk from conifer encroachment. The Wyoming Front Aspen Restoration Project (WYFARP) that began in 2007 is a 10-year effort to improve the ecological condition of aspen stands along the Wyoming Range front. The project plan calls for the treatment of 9,000 total acres of aspen over the 10-year extent of the project. Mechanical thinning and prescribed fire are the primary tools being used to remove conifer trees. In some stands where it is feasible, merchantable conifer timber is being removed and the receipts are being used to help offset the cost of the slashing and burning treatments. The objectives of this project are to 1) remove 100% of conifer within targeted stands, 2) obtain aspen sucker density of 1,000 stems per acre 10-15 years post burn, 3) obtain total ground cover of greater than 90% 5 years post burn, and 4) treat approximately 900 acres per

year for the next 5 years. Partners include RMEF, BLM, WGFD, WWNRT, Wyoming State Forestry Division, local ranchers, Northwest Management Inc, RY Timber, CET Technologies, and Terra Firma.

This project is designed to improve habitat for aspen-dependent species such as elk, mule deer, and migratory birds. A healthy aspen community is essential for wildlife and plant diversity in the Rocky Mountain region as it is second only to riparian in productivity. These aspen stands are utilized for parturition, nuptial and winter habitat for elk and mule deer. They also provide crucial habitat (winter range and migration routes) for moose, greater sage-grouse, and other SGCN identified by WGFD in their Comprehensive Wildlife Conservation Strategy (CWCS) report.

The WYFARP project treated 2,632 acres of at risk aspen stands in the Wyoming Range in the first four years. The treatments have produced 1.1 million board feet of timber providing jobs and economic stimulus to the local community. This project has also increased use of non-traditional forest products. To date, approximately 2,000 tons of biomass has been sold and utilized for bio-energy, mulch and landscaping chips. One hundred and fifteen tons of chips were sold to augment reclamation of gas well sites. There have also been approximately 1,500 tons of fuel-wood produced and approximately 1,500 Christmas trees. All profits from the sale of these forest products have been used to treat additional acres within the project area. In 2009, monitoring was conducted at 90 circle plots to evaluate grazing management practices following prescribed burns, and to compare data collected at unburned plots, burned plots, burned/grazed plots, and to pre-treatment plots. In 2010, 695 acres were treated in the Camp Creek Allotment. The treated stands have shown a nearly 500 percent increase in stems per acre from the pre-treatment data taken in 2007 (735 stems per acre to 3,600 stems per acre after the burn treatments). In 2011, 897 acres were treated at Camp Creek. During 2012, a prescribed burn was implemented to treat 850 acres at the Upper Billies project area. In 2013, a prescribed burn to treat 178 acres was implemented completing all planned burn treatments in the Camp Creek project area. Post treatment monitoring was conducted by the WGFD during 2013. The Fontenelle wildfire that occurred in 2012 is being incorporated into future mechanical and prescribed burn treatments. The wildfire overlapped many of the large scale treatments proposed for the Wyoming Front Aspen Restoration Project (WYFARP) as well as the Wyoming Range Mule Deer Intiative (see Project # 5 – Piney Creek Vegetation Restoration Project for additional details). A treatment is planned for 680 acres of federal land within the Miller Mountain area during 2015. Conifers will be removed mechanically or by hand, piled, and burned. A monitoring plan has been developed to evaluate the effectiveness of this treatment annually. Monitoring will, at a minimum, consist of photo points established for every project area. Selected stands will be more intensely monitored to evaluate aspen regeneration, herbaceous cover, plant species diversity, and herbaceous production. Treatment areas will be evaluated for noxious weeds three consecutive years following treatment. If noxious weeds are detected, they will be controlled through a contractual agreement. Treated areas may be rested from livestock grazing for a period of two calendar years if it is determined necessary. All rest options will be evaluated with the cooperation of the grazing permittee.

C. Wyoming Range Mule Deer Focus Areas (as identified in the Wyoming Range Mule Deer Habitat Management Plan)

Issues

- **Declining Wyoming Range Mule Deer Herd population:** There has been no sustainable growth of the Wyoming Range mule deer population since the late 1990's. This is likely due to a combination of changes in habitat conditions, harsh winters, and current land use (habitat fragmentation due primarily to energy development) on core winter ranges (Wyoming Range Mule Deer Plan, 2011). Overwinter losses have been above normal on one or more winter ranges every 2 to 3 years. These frequent and significant losses prevent the population from increasing. The 2011Wyoming Range Mule Deer Plan (WGFD 2011) was developed by WGFD in response to these declines. This plan identifies winter ranges as a limiting factor for mule deer and a priority for habitat enhancement and restoration projects. Management issues identified by the WGFD (with public input) in the Wyoming Range Mule Deer Plan include habitat management, population management, public involvement and outreach, research, predator management, and law enforcement. The Sublette Mule Deer herd occupies the northern portion of the Wyoming Range East priority area, and faces many of the same issues as the Wyoming Range herd. From 2008 to 2010, mule deer abundance on the Mesa declined by 20%,

exceeding the 15 % threshold which requires mitigation efforts as identified in the 2008 Pinedale Anticline Record of Decision.

- **Habitat degradation on big game crucial winter range, transitional habitats and migration routes:** The Wyoming Range Mule Deer Focus Area provides crucial winter range for elk, mule deer, and moose; transitional habitat for mule deer; and migration routes for mule deer, elk, moose, and pronghorn. In recent years, recurring drought has reduced the amount and quality of forage produced on many deer ranges, resulting in greater competition for remaining food supplies. In addition, the 2011Wyoming Range Mule Deer Habitat Management Plan reports that sagebrush and mountain shrub communities in the focus area lack seedlings and younger age classes.
- **Excessive ungulate browsing:** Sagebrush and mountain shrubs in the LaBarge and Fotenelle crucial winter habitats undergoe moderate to excessive browsing. In addition, excessive browsing of willow and other riparian woody shrubs and the occurrence of cheatgrass and other invasive plant species is documented in the North LaBarge area. Excessive browsing to mountain shrubs and sagebrush by elk is occurring as they travel to and from feedgrounds (Jewett, North Piney and Finnegan feedgrounds). Herbivory levels, especially in the Ryegrass and Bench Corral areas, are occurring at unsustainable levels. Small isolated patches of mountain shrubs have resulted in nearly 100 percent of annual leader utilization with virtually no recruitment (WGFD 2012).

Conservation Actions and Intended Outcomes

5. Piney Creek Vegetation Restoration Project

The Piney Creek Vegetation Restoration Project aims to maximize beneficial effects of the 2012 Fontenelle wildfire through proper restoration of affected aspen, mountain shrub, and riparian communities. The expansive wildfire burned 64,077 acres of private and public land between Snyder Basin and North Piney Creek. Project objectives include: 1) provide post-fire rest from livestock on burned areas to accommodate vegetative recovery, 2) assist with the replacement of lost infrastructure, and 3) conduct monitoring of vegetation responses and early detection and control of weed infestations. Previous monitoring of vegetation associated with the Horse Creek Wildfire and numerous prescribed fires in the Wyoming Range serves as a template for setting vegetation objectives. The burn area overlaps many of the large-scale treatments proposed for the Wyoming Front Aspen Restoration Project (WYFARP) and the Wyoming Mule Deer Initiative.

In 2013, the project was initiated and all displaced livestock were relocated to vacant USFS allotments, WGFD Habitat Units or leased private pasture. Livestock were herded by riders to these new locations. Permittees reported high satisfaction with the response to their plight. Weed control efforts were initiated in concert with Sublette County Weed and Pest, lost infrastructure was inventoried, and monitoring was conducted. Numerous projects were implemented in 2014 including the acquisition of alternative forage for displaced livestock, construction and reconstruction of approximately 15 miles of fencing, and weed surveillance, treatment and monitoring of 520 acres. Backcounty scouting and treatment were added to weed control efforts in 2014. During the course of the year, agencies have monitored vegetation and infrastructure redevelopment with positive results. Plans for 2015 include continued monitoring and weed control efforts and the return of cattle to customary allotments. Planning is underway for long-term maintenance, particularly with regard to weed surveillance and control.

This project addresses the priority area's issues of excessive ungulate browsing, habitat degradation on big game transitional habitats and migration routes, and indirectly, the declining Wyoming Range Mule Deer Herd population. The identification of common goals and objectives by numerous partners has provided a unique opportunity for collaboration in this landscape-scale restoration. Partners include the Bridger Teton National Forest, BLM, NRCS, Sublette County Conservation District, WGFD, private landowners, and eleven federal permittees.

6. Wyoming Range Mule Deer Habitat Treatments

A statewide Mule Deer Initiative (WMDI) was formed by the WGFD's Mule Deer Working Group in 2009 to outline factors believed to contribute to declining mule deer populations and to identify strategies intended to sustain current deer numbers (Wyoming Mule Deer Initiative, WGFD, 2009). The WMDI is intended to guide the

development of individual management plans or strategies for key herd units. Following the strategies and objectives identified in the WMDI, The Wyoming Range Mule Deer Plan (WGFD, 2011) was developed to address habitat, deer population levels, and social issues specific to the Wyoming Range Mule Deer Herd (see plan for a detailed discussion on ongoing and proposed actions). One of the management actions identified in this plan was the need to develop long-term approaches and plans to implement habitat treatments in the Wyoming Range. The Wyoming Range Mule Deer Habitat Management Plan: Big Piney – LaBarge Area (WGFD, 2012) is an outcome of this need. The LaBarge plan recommends specific projects to increase the quality and quantity of mule deer habitat in the Big Piney and LaBarge area. Most project locations are located within crucial winter range, which WGFD has identified as a limiting factor for the herd. While the majority of the enhancement projects are located in sagebrush communities, projects are also proposed in aspen, mixed-mountain shrub, and riparian communities. Recommendations include actions to reduce invasive plant species and enhanced reclamation associated with oil and gas development. Treatments and other conservation actions are expected to begin in 2014 and continue through 2021.

The Wyoming Range Mule Deer Habitat Project is a cooperative project with the BLM and WGFD to enhance crucial winter and transitional habitats important to Wyoming Range mule deer and many other wildlife species. It addresses the priority area's issues of declining mule deer populations and habitat degradation on big game crucial winter range, transitional habitats and migration routes. Project objectives include:

- Increase sagebrush vigor and seed production;
- Increase sagebrush regeneration;
- Increase forb diversity and percent composition;
- Increase grass diversity and percent composition; or
- Release younger sagebrush; or
- Increase aspen regeneration.

The planning phase of the project was completed during 2012. Herbicide (Spike) applications were used to thin canopy cover of Wyoming big sagebrush 30-50%. The herbicide application took place on approximately 275 acres. In 2013, 400 miles of road were surveyed for cheatgrass and other noxious weeds in the South LaBarge portion of the treatment area. In 2014, 2,233 acres were treated including 1,510 acres of mechanical or chemical mountain shrub treatments and 723 acres of mechanical preparation for a prescribed burn in aspen. Additionally, 300 acres of cheatgrass were were treated and 5,258 acres of cultural inventory were conducted. Approximately 5 miles of fence was constructed to assist with resting treated areas. Pre-treatment vegetation monitoring was conducted at representative sites in 2014. Vegetation monitoring will continue before and after treatments to determine if vegetation objectives are being met. In addition to monitoring, 2015 plans include constructing 5 miles of fence, treating 2,674 acres, and spraying 300 acres of cheatgrass. See the Wyoming Range Mule Deer Habitat Plan: Big Piney – LaBarge Area (WGFD, 2012) for further details.

<u>Additional Conservation Actions by WLCI Partners</u>

- Wyoming Range Mule Deer Nutritional Carrying Capacity: In conjunction with the "Wyoming Range Mule Deer Nutritional Carrying Capacity" research project conducted by the Wyoming Cooperative Fish and Wildlife Research Unit, a series of winter range production and utilization habitat transects were established by the WGFD. The main purpose of this study is to link habitat condition and winter range shrub utilization with mule deer body condition and carrying capacity together to manage the overall herd health and population level of the Wyoming Range Mule Deer herd. Winter range production and utilization transects have been established to collect data across the entire extent of this crucial mule deer winter range.
- USGS Mountain Shrub Mapping and Assessment: During 2013, USGS completed GIS map products of mountain shrub patches within the Wyoming Range Mule Deer Focus Areas. USGS began conducting an assessment designed to evaluate the condition of mountain shrub species during the 2014 field season, sampling 33 points. Additional sampling is planned for 2015. This assessment will complement efforts associated with the Wyoming Range Mule Deer Nutritional Carrying Capacity study and ongoing mountain shrub monitoring by WGFD and BLM. Field data collected from the mapping efforts in 2012 and 2013 are being incorporated into modeling efforts that may provide potential for regional-scale mapping applications.

- BLM Pinedale Field Office and the Pinedale Anticline Project Office (PAPO) Tree Plantings: The BLM Pinedale Field Office and the Pinedale Anticline Project Office (PAPO) are proposing to plant cottonwood trees to address declining raptor species along Cottonwood Creek.
- Sublette Mule Deer Habitat Project: This project includes phased vegetation treatments to improve crucial winter and transition habitat for mule deer. The treatments will target sagebrush, bitterbrush, mountain mahogany, salt desert shrub, and aspen. Methods will include mowing, aeration, seeding, pitting, Spike® herbicide, fencing, conifer thinning, and prescribed burning over a period of eight to ten years. The vegetation treatments are intended mainly to enhance mule deer habitat but will also benefit sage-grouse, pronghorn, elk, moose, and migratory bird species. The project area is located on BLM and state lands along the eastern front of the Wyoming Range extending from south and east of LaBarge to northwest of Big Piney, WY. (Are there plans to seek WLCI funding for some of these activities? Should this be mentioned as part of the Wyoming Range Mule Deer Habitat Treatment Project described above as part of its priority area?).

Timeframe: 10 to 15 years

Relationship to Existing Plans and Strategies

- BLM Pinedale Resource Management Plan (Bureau of Land Management, 2008)
- Sublette County Conservation District Long Range Plan (Sublette County Conservation District, 2010)
- Wyoming Range Mule Deer Habitat Management Plan: Big Piney-LaBarge Area (Damm & Randall, 2012)
- Wyoming Range Mule Deer Plan (Wyoming Game and Fish Department, 2011)
- 10-Year Sublette Mule Deer Mitigation Plan (WGFD, 2012)
- The Wyoming Mule Deer Initiative (WGFD, 2009)
- WGFD Strategic Habitat Plan (Wyoming Game and Fish Department, 2009):
- The WGFD Strategic Habitat Plan identifies actions and strategies to aid in the conservation of the Horse Creek and Cottonwood Creek Watersheds crucial habitat area. Some of these actions include:
    - Regeneration of aspen communities near streams to encourage beaver activity and to provide dam building materials able to withstand high run-off conditions in North and South Cottonwood Creeks and key tributaries. Beaver ponds would create side channels and cover for young trout, provide holding areas during drought years, and provide important wetland habitats for the diverse assemblage of species.
    - Inventories and assessments of aspen communities in portions of this watershed were completed and enhancement projects initiated.
    - Develop cooperative management agreements with BLM, USFS, State Land Board, private landowners, and other interests to maintain open spaces and watershed function.
    - Protect and maintain important habitats through conservation easements.
    - Develop management agreements with oil and gas operators and BLM that protect or maintain wildlife habitat.
    - Prevent and reduce competition between native CRC and nonnative sport fish.
    - Protect and enhance remaining tall forb communities.

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